

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

*Ex parte* JAMES N. HUMENIK, TUYEN HONG NGUYEN,  
GEORGE R. PROTO, DEMIAN M. RICCARDI,  
KRISHNA G. SACHDEV and KRYSTYNA W. SEMKOW

Appeal No. 2006-0238  
Application 10/026,239

ON BRIEF

Before WARREN, WALTZ and JEFFREY T. SMITH, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

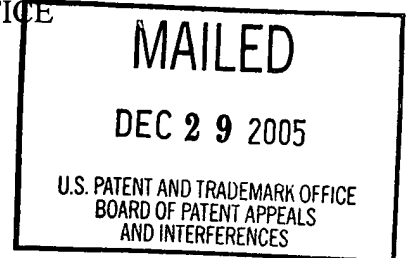
*Decision on Appeal*

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 1 through 16, all of the claims in the application.

Claims 1 and 7 illustrates appellants' invention of a process for cleaning paste residue from a workpiece with tetramethylammonium hydroxide (TMAH), and is representative of the claims on appeal:

1. A process for cleaning paste residue from a workpiece comprising the steps of obtaining a workpiece having a paste residue thereon and electrolytically contacting the workpiece with an aqueous solution containing 0.2 to 2 weight percent TMAH.

7. The process of claim 1 further comprising the step, prior to the step of electrolytically contacting, of nonelectrolytically contacting the workpiece with an aqueous solution containing 0.2 to 2 weight percent TMAH.



The references relied on by the examiner are:

Sachdev et al. (Sachdev '799)	6,277,799	Aug. 21, 2001 (filed Jun. 25, 1999)
Sachdev et al. (Sachdev '527)	6,280,527	Aug. 28, 2001 (filed Jun. 12, 1998)

Samuel Spring (Spring), "Special Methods of Cleaning," *Metal Cleaning*, 67-73 (New York, Reinhold Publishing Corporation. 1963).

The examiner has advanced the following grounds of rejection on appeal:

claims 1 through 16 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 through 26 of Sachdev '527 in view of Spring (answer, pages 3-4); and

claims 1 through 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over any one of Sachdev '527 and Sachdev '799 further in view of Spring (answer, pages 4-6).

Appellants argue claims 1 through 16 as a group with respect to the first ground of rejection, and argue claims 1 and 7 with respect to the second ground of rejection. Thus, we decide this appeal based on appealed claims 1 and 7. 37 CFR § 41.37(c)(1)(vii) (September 2004).

We affirm.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the answer and to the brief<sup>1</sup> and reply brief for a complete exposition thereof.

#### *Opinion*

As an initial matter, we interpret claims 1 and 7 by giving the terms thereof the broadest reasonable interpretation in their ordinary usage in context as they would be understood by one of ordinary skill in the art in light of the written description in the specification, unless another meaning is intended by appellants as established in the written description of the specification, and without reading into the claims any limitation or particular embodiment disclosed in the specification. *See, e.g., In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830 (Fed. Cir. 2004); *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). The plain language of independent claim 1 encompasses any process for cleaning any manner

---

<sup>1</sup> We consider the brief filed February 24, 2005.

and amount of paste residue from any manner of workpiece that comprises at least the step of electrolytically contacting the workpiece with an aqueous solution containing 0.2 to 2 weight percent TMAH, including the process encompassed by dependent claim 7 which further comprises the prior step of nonelectrolytically contacting the workpiece with an aqueous solution containing 0.2 to 2 weight percent TMAH. The transitional term “comprising” in each of these claims has its customary “open-ended” meaning. *See generally, Exxon Chem. Pats., Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555, 35 USPQ2d 1801, 1802 (Fed. Cir. 1995) (“The claimed composition is defined as comprising - meaning containing at least - five specific ingredients.”); *In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981) (“As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term ‘comprises’ permits the *inclusion* of other steps, elements, or materials.”).

We find that Sachdev ‘527 and Sachdev ‘799 are based on applications filed prior to November 29, 1999 and were granted prior to December 10, 2004. Thus, each of Sachdev ‘527 and Sachdev ‘799 is available as prior art under 35 U.S.C. §§ 102(a) and (e), and thus, under 35 U.S.C. § 103(a). In view of the filing and grant dates, the provisions of 35 U.S.C. § 103(c) (1999 and 2004) cannot be used to disqualify either reference as available prior art under 35 U.S.C. § 102 (e). *See Manual of Patent Examining Procedure (MPEP) § 706.02(l)* (8th ed., Rev. 3, August 2005). We further find that patent claims 1 through 26 of Sachdev ‘527 and patent claims 1 through 8, 11 through 13, 16 and 17 of Sachdev ‘799 encompass processes of cleaning paste residue from a workpiece with a solution containing TMAH which differ from the claimed processes encompassed by appealed claims 1 and 7, as we have interpreted these claims above, in that the patent claims do not specifically provide for electrolytically contacting the workpiece, either without (appealed claim 1) or with (appealed claims 1 and 7) a step of non-electrolytically cleaning the workpiece. The processes of cleaning paste residue from a workpiece with a solution containing TMAH that would have been disclosed to one of ordinary skill in this art by the patent specifications of each of Sachdev ‘527 and Sachdev ‘799, differ from the claimed processes encompassed by appealed claims 1 and 7 in the same manner as found by the examiner (answer, pages 3 and 5).

We find that Spring would have disclosed to one of ordinary skill in this art that it was known in the art to electrolytically clean metal parts in solution, which generates hydrogen and oxygen gases, that provide high levels of agitation, and imposes an electrical charge on the metal parts, that can remove complex soil residues, for purposes of high quality cleaning (page 67). The reference further would have disclosed that “[e]lectrocleaning ordinarily follows other cleaning steps,” the latter providing “a reasonably clean condition except for traces of oily soil and modest quantities of finely divided solids and smut,” before the workpiece “goes into the electrocleaner” (pages 68 and 70-72). The prior cleaning steps include using “the same cleaner . . . for soak and electrocleaning” to avoid “excessive electrocleaning” and provide “a clean surface” so that “the gas bubbles can form and roll back the remainder of the soil,” which “demonstrates . . . that the alkaline electrocleaner must do more than supply ions to carry the current” in that the cleaner should “act on the soil while the so-called ‘scrubbing action’ of the gas assists in soil removal” (pages 68-69). Spring would have taught that advantageous electrocleaners supply hydroxyl ions which “are efficient current carriers” and provide “enhanced detergency” (footnote, pages 70-71).

We find substantial evidence in the record supporting the examiner’s position in each of the grounds of rejection. We find that one of ordinary skill in this art would have been led by the patent claims of Sachdev ‘527 and the disclosure of each of Sachdev ‘527 and Sachdev ‘799 to use TMAH in the claimed amount to obtain effective soak cleaning of paste residue from a work piece, and that Spring would have reasonably suggested to this person that TMAH can supply the hydroxyl ions which can provide effective electrocleaning of metals containing deposits either with or without a soak step. Thus, we determine that one of ordinary skill in the art would have been motivated by the combined teachings of the references to use an electrocleaning step as taught by Spring in the processes of each of Sachdev ‘527 and Sachdev ‘799 in the reasonable expectation of obtaining a more efficient cleaning process as suggested by Spring. Accordingly, we are of the opinion that one of ordinary skill in this art routinely following the processes encompassed by the patent claims of Sachdev ‘527 combined with Spring, and the combined teachings of the disclosure of each of Sachdev ‘527 and Sachdev ‘799 and Spring would have reasonably arrived at the processes encompassed by each of appealed claims 1 and 7, including

all of the elements thereof arranged as required therein, without resort to appellants' claims and specification. *See In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988) ("The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that [the claimed process] should be carried out and would have a reasonable likelihood of success viewed in light of the prior art. [Citations omitted] Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure."); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981)("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art."); *see also In re O'Farrell*, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988) ("Obviousness does not require absolute predictability of success. . . . There is always at least a possibility of unexpected results, that would then provide an objective basis for showing the invention, although apparently obvious, was in law nonobvious. [Citations omitted.] For obviousness under § 103, all that is required is a reasonable expectation of success. [Citations omitted.]").

We are not persuaded otherwise by appellants' arguments. With respect to the first ground of rejection, appellants submit that we "need to consider whether a rejection based on obviousness-type double patenting is proper when the prior (underlying) patent is not copending with the present application" (brief, pages 5-7); and that "the obviousness-type double patenting rejection should not be extended to those situations where the underlying patent is clearly statutory prior art other than through 35 U.S.C. 102(e)," pointing out that the grant date of Sachdev '527 precedes the filing date of the present application, thus is available as prior art under 35 U.S.C. § 102(a), and alleging that it is "implicit in the policies of the PTO," including Chart II-B in MPEP § 804, "not to make an obviousness-type double patenting rejection when there is a basis for making a 35 USC 102(a)/103 rejection" (*id.*, pages 7-8).

The examiner responds that there is "[n]o requirement for copendency" in any statute, case law, rule or MPEP, pointing out that MPEP § 804 requires that a "double patenting rejection

when the conflicting claims are presented in the application and a patent, which are commonly owned and have different inventive entities,” agreeing with appellants that Sachdev ‘527 is available prior art under both 35 U.S.C. § 102(a) and (e) (answer, page 7). In reply, appellants maintain their position set forth in the brief, further arguing that the rejection should be under 35 U.S.C. § 102(a) instead of 35 U.S.C. § 102(e), citing MPEP § 706.02(f), and since a rejection should not be made under the latter statutory provision, the obviousness-type double patenting rejection cannot be made (reply brief, pages 1-4).

We cannot subscribe to appellants’ position. We find no basis in 35 U.S.C. § 102 supporting appellants’ notion that only one of the provisions of this section can apply to an “invention,” and where more than one provision applies between a United States Patent and a United States application, the applicable provision is determined based on whether there is copendency. Appellants have cited no authority whatsoever supporting their position. Thus, as appellants admit, Sachdev ‘527 is applicable to the claimed invention under 35 U.S.C. §§ 102(a) and 102(e), and therefore, Sachdev ‘527 is available prior art under 35 U.S.C. § 103(a) in both respects. The requirements of § 102(e) are the more rigorous, and recourse is available to appellants as pointed out by the examiner (answer, pages 4-5), except that the provisions of 35 U.S.C. § 103(c) (1999 and 2004) are not available to appellants as we pointed out above. Indeed, Appellants have failed to cite authority supporting their position with respect to the ground of rejection based on the judicially created doctrine of obviousness-type double patenting, and have not established that Sachdev ‘527 is unavailable as a reference under §§ 102(a) and 102(e).

We now turn to the merits of the grounds of rejection. Appellants admit that the teachings of Sachdev ‘527, Sachdev ‘799 and Spring “are well known,” but submit that one of ordinary skill in this art would not have been motivated to combine the teachings of these references because the Sachdev references and Spring each “apparently work well by themselves” and the examiner has not pointed to any teaching in support of the combination (brief, pages 11-12 and 14-15). Appellants further rely on the results reported in specification Tables 1 and 2 (pages 13-15), contending that the cleaning time “dramatically reduced from 100 seconds to just 20 seconds” for the claimed electrolytic cleaning process over the use of

TMAH alone is evidence of “vastly superior, surprising and unexpected results,” relying on *In re Soni*, 54 F.3d 746, 34 USPQ2d 1684 (Fed. Cir. 1995) (brief, pages 12-14). The examiner responds that one of ordinary skill in the art would have been motivated to combine the references in order to take advantage of the high level of agitation provided by the generated hydrogen and oxygen gases and the electrical charge imposed on the work, and “would have reasonably expected that electrocleaning would significantly enhance the cleaning results” of the processes of the Sachdev references (answer, pages 8-9). Thus, the examiner finds that the results reported in the specification Tables “could not be considered unexpected” (*id.*, page 9). Appellants reply that “Spring does not teach that electrocleaning is superior to other methods of cleaning” (reply brief, page 5).

We agree with the examiner’s position. We found above that Spring would have taught the benefits of electrocleaning, with and without a prior soak step in the same cleaning solution, and particularly where hydroxyl ions are provided by an active reagent which is effective for cleaning the workpiece. In this respect, we further found above that Sachdev ‘527 and Sachdev ‘799 each make clear that the hydroxyl ion containing TMAH will clean paste residue from a workpiece. Thus, we remain of the opinion that the combined teachings of these references provide more than sufficient motivation to use an electrocleaning step as taught by Spring in the processes of each of Sachdev ‘527 and Sachdev ‘799 in the reasonable expectation of obtaining a more efficient process as suggested by Spring.

We consider the evidence in specification Tables 1 and 2 to the extent argued by appellants in the brief and reply brief. We find that specification Tables 1 and 2 provide comparisons under the stated conditions, including a soak step, in which the differences in processing time is represented by the difference in processing time provided by the comparison of Examples 1 (“20 secs.”) and 5 (“100 secs.”) as forth in the brief (specification, page 13). With respect to the results in specification Table 1, appellants state in the written description in the specification that “[i]n every instance, those samples that were electrolytically cleaned required dramatically less time than those samples that were not electrolytically cleaned” (*id.*).

Our reviewing court stated in *Soni* that “one way for a patent applicant to rebut a *prima facie* case of obviousness is to make a showing of ‘unexpected results’, i.e., to show that the

claimed invention exhibited some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected.” 54 F.3d at 750, 34 USPQ2d at 1687. In this respect, it is well settled that appellants have the burden to submit a scientific explanation or evidence establishing the practical significance of data in the record with respect to unexpected results vis-à-vis the teachings of the applied references and why the results would have been considered unexpected by one of ordinary skill in the art, which burden is not carried by mere arguments of counsel. *See generally, In re Geisler*, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997); *In re Merck & Co.*, 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986); *In re Longi*, 759 F.2d 887, 897, 225 USPQ 645, 651-52 (Fed. Cir. 1985); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972)(“This court has said . . . that mere lawyers’ arguments unsupported by factual evidence are insufficient to establish unexpected results. [Citations omitted.] Likewise, mere conclusory statements in the specification and affidavits are entitled to little weight when the Patent Office questions the efficacy of those statements. [Citations omitted]”); *In re Klosak*, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972); *In re D’Ancicco*, 439 F.2d 1244, 1248, 169 USPQ 303, 306 (CCPA 1971). We find that appellants have not carried their burden.

We find no evidence or scientific explanation in the record establishing that the difference in cleaning time between Examples 1 and 5 obtained under the conditions stated in specification Example 1 would have been an unexpected result to one of ordinary skill in this art. Indeed, the only statement by appellants which addresses this specific showing is the allegation in the specification and the brief that the results are “dramatic,” which does not establish that the result would have been so considered by one of ordinary skill in the art in light of the patent claims of Sachdev ‘527 and the disclosure of each of Sachdev ‘527, Sachdev ‘799 and Spring, and thus, is mere arguments of counsel, not evidence which supports appellants’ position. *Geisler*, 116 F.3d at 1470, 43 USPQ2d at 1365-66. Indeed, in the absence of evidence or scientific explanation of the practical significance of the results reported in the specification Tables, we agree with the examiner that same constitute no more than the results reasonably obtained from the teachings of the references by one of ordinary skill in this art, that is, the addition of an electrocleaning step subsequent to a soak step which significantly enhances the



cleaning process as taught by Spring, and thus, is not unexpected. Therefore, on this record, the evidence is indicative of obviousness rather than nonobviousness. *See, e.g., In re Hoffmann*, 556 F.2d 539, 541, 194 USPQ 126, 128 (CCPA 1977) (reference disclosed property argued to be unexpected); *In re Gershon*, 372 F.2d 535, 537-39, 152 USPQ 602, 604-05 (CCPA 1967) (references teach the superiority of using a reagent for a particular purpose).

Furthermore, even if the evidence in specification Tables 1 and 2 is held to establish unexpected results under the parameters of those Examples, we find that the same is not commensurate in scope with the processes encompassed by appealed claims 1 and 7 which require only that any process of using TMAH in the specified amount includes an “electrolytically contacting step,” with claim 7 additionally requiring only a soak step. Indeed, there is no limitation on the other parameters of the processes encompassed by the appealed claims, and therefore, there is no reasonable factual basis on which to conclude that the myriads of processes so encompassed by the appealed claims would behave in the same manner as the tested processes vis-à-vis the prior art processes. *See In re Kulling*, 897 F.2d 1147, 1149-50, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990); *In re Clemens*, 622 F.2d 1029, 1035-36, 206 USPQ 289, 295-96 (CCPA 1980); *In re Dill*, 604 F.2d 1356, 1361, 202 USPQ 805, 808-09 (CCPA 1979); *In re Thompson*, 543 F.2d 1290, 1295, 192 USPQ 275, 277-78 (CCPA 1976); *Lindner*, 457 F.2d at 508, 173 USPQ at 358.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Sachdev ‘527, Sachdev ‘799 and Spring with appellants’ countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 1 through 16 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

We have not separately addressed the merits of the obviousness-type double patenting rejection based upon the he patent claims of Sachdev ‘527 in view of Spring because we consider the same to be subsumed in the ground of rejection under § 103(a). *See In re Ornitz*, 376 F.2d 330, 334, 153 USPQ 453, 457 (CCPA 1967), citing *In re Bowers*, 359 F.2d 886, 891 n.7, 149 USPQ 570, 575 n.7 (CCPA 1966).

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness and nonobviousness found in the record in light of appellants' argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 1 through 16 is not patentably distinct from and thus unpatentable over the invention encompassed by patent claims 1 through 26 of Sachdev '527 in view of Spring under the judicially created doctrine of obviousness-type double patenting as a matter of law.

The examiner's decision is affirmed.

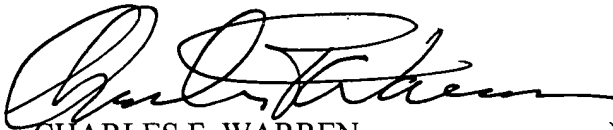
*Other Issues*

We found above that patent claims 1 through 8, 11 through 13, 16 and 17 of Sachdev '799 encompass processes of cleaning paste residue from a workpiece with a solution containing TMAH which differ from the claimed processes encompassed by appealed claims 1 and 7, as we have interpreted these claims above, in that the patent claims do not specifically provide for electrolytically contacting the workpiece, either without (appealed claim 1) or with (appealed claims 1 and 7) a step of non-electrolytically cleaning the workpiece. Thus, the difference between the appealed claims and said patent claims of Sachdev '799 is the same as that between the appealed claims and the patent claims of Sachdev '527.

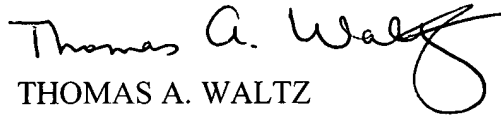
Thus, we suggest that the examiner include patent claims 1 through 8, 11 through 13, 16 and 17 of Sachdev '799 in any ground of rejection of the appealed claims under the judicially created doctrine of obviousness-type double patenting made by the examiner in any further prosecution of the appealed claims subsequent to the disposition of this appeal.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (2005).

*AFFIRMED*



CHARLES F. WARREN  
Administrative Patent Judge



THOMAS A. WALTZ  
Administrative Patent Judge



JEFFREY T. SMITH  
Administrative Patent Judge

BOARD OF PATENT  
APPEALS AND  
INTERFERENCES

Appeal No. 2006-0238  
Application 10/026,239

International Business Machines Corporation  
Dept. 18G  
Bldg. 300-482  
2070 Route 52  
Hopewell Junction, NY 12533